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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/559,704	12/07/2005	Taisuke Hirooka	60303.55/ok	1845
54070 7590 09/21/2010 HITACHI METALS, LTD. C/O KEATING & BENNETT, LLP 1800 Alexander Bell Drive SUITE 200 Reston, VA 20191				
			EXAMINER	
			GARCIA, CARLOS E	
			ART UNIT	PAPER NUMBER
			2627	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/559,704

Applicant(s)

HIROOKA ET AL.

Examiner

CARLOS E. GARCIA

Art Unit

2627

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 8/26/2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23, 25-39 and 44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23, 25-39 and 44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/GS/US)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

NON-FINAL REJECTION

Allowable Subject Matter

1. The indicated allowability of claim 24 is withdrawn in view of the newly discovered reference(s) to Gider et al. Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 23, 25-26, 33-34, 38-39 and 44 are rejected under 35 U.S.C. 102(b) as being anticipated by Gider et al. (US 20040027719 A1; hereinafter Gider).

Re claim 23: Gider discloses a thin-film magnetic head substrate (see Fig.3) comprising:

a ceramic base 308 with a principal surface ({0023}); and

an undercoat film 310, which is made of an aluminum oxide and which covers the principal surface of the ceramic base ({0023}), an electrical/magnetic transducer 326 being provided on the undercoat film;

wherein the substrate further includes an intermediate layer 304 between the principal surface of the ceramic base and the undercoat film (lowermost side of film 310);

the intermediate layer is made of a material other than the aluminum oxide ({0028}), has been patterned so as to make a portion of the principal surface of the ceramic base 308 contact with the undercoat film 310 (see Fig.3), and has an opening where the electrical/magnetic transducer is not located (i.e., the area where no

intermediate layer 304 is formed, such as the end of 304 on the left side of Fig.3, which is directly adjacent portions 328/329, and allows 310 to make continuous contact with 308, and where transducer 326 is not located); and

the ceramic base is a single monolithic layer (as shown in Fig.3) arranged to be the bottom-most layer of the thin-film magnetic head substrate.

Re claim 25: Gider further discloses wherein the electrical/magnetic transducer provided on the undercoat film includes:

a lower magnetic shield film 314;
a magneto-resistive element 312 arranged on the lower magnetic shield film; and
an upper magnetic shield film 314, which has been deposited on the lower magnetic shield film so as to cover the magneto-resistive element, and wherein the intermediate layer has been patterned so as to cover the entire projection of the magneto-resistive element on the principal surface of the ceramic base (the 'projection' of the magnetoresistive film 312 is considered to be the extent of film 312 from the air bearing surface towards the far (left-most) end of the film 312 in Fig.3; layer 304 extends further than the far end of film 312, thereby covering the entire projection of film 312).

Re claim 26: Gider further discloses wherein the intermediate layer has been patterned so as to cover the entire projection of the lower magnetic shield film on the principal surface of the ceramic base (the 'projection' of the lower magnetic shield film 314 is considered to be the extent of film 314 from the air bearing surface to the far (left-

most) end of the film 312 in Fig.3; layer 304 extends further than the far end of film 314, thereby covering the entire projection of film 314).

Re claim 33: Gider further discloses wherein the intermediate layer is made of a metal film or a Si film (Cu metal for instance [0028]).

Re claim 34: Gider further discloses wherein the intermediate layer is made of a material selected from the group consisting of Cu, alloys including Cu, Cr, alloys including Cr, and Si ([0028]).

Re claim 38: Gider further discloses the thin-film magnetic head slider (as shown in Fig.3) comprising: the thin-film magnetic head substrate of claim 23; and the electrical/magnetic transducer, which is provided on the undercoat film of the thin-film magnetic head substrate (as discussed above regarding claim 23).

Re claim 39: Gider further discloses a hard disk drive comprising the thin-film magnetic head slider of claim 38 (Fig.1).

Re claim 44: Gider discloses a method of making a thin-film magnetic head slider, the method comprising the steps of:

preparing the thin-film magnetic head substrate of claim 23 (as discussed above for claim 23); and

fabricating the electrical/magnetic transducer on the undercoat film (as shown in Fig.3).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gider in view of Hirooka (US 2003/0036025; hereinafter Hirooka '025). The teachings of Gider have been discussed previously.

Re claims 27-29: Gider discloses the claimed invention except for wherein a portion of the intermediate layer makes an alignment mark for use in positional alignment, as recited in claim 27; wherein a portion of the intermediate layer makes a pattern representing identification information, as recited in claim 28; or wherein the identification information includes information about the identity of the ceramic base, as recited in claim 29.

Hirooka '025 teaches a technique of recording different identifiers as used on thin-film magnetic heads (see abs; para.0004-0009). Furthermore, Hirooka '025 teaches the process of recording identifiers on an Al₂O₃-TiC type ceramic wafer 60 by placing a thin film 65 of metal material on a top surface of the ceramic layer 60 (para.0105-0107; Fig.8A-8D). The thin metal film 65 is patterned to a desired identifying mark, using the

process illustrated in Fig.8A-8D. Additionally, Hirooka '025 suggests a method of placing identifier on multiple ceramic wafers (para.0086).

Therefore, a person of ordinary skill in the art would have recognized that applying the known technique of recording an identifier made of a metallic film as taught by Hirooka '025 and placing such identifier film over a surface of the ceramic layer of the magnetic thin film substrate of the Gider for the purpose identifying the slider, would have yielded predictable results and would provided a way to identify the slider.

6. Claims 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gider in view of Hirooka '025 further in view of Hirooka (JP 2004-127442; hereinafter Hirooka '442).

The teachings of Gider as modified by Hirooka '025 have been discussed previously.

Re claims 30-31: Gider as modified by Hirooka '025 discloses the claimed invention except for wherein the pattern representing the identification information has been recorded on a plurality of areas of the principal surface of the ceramic base, mutually different pieces of the information being distributed to the respective areas, as recited in claim 30; or wherein the areas are arranged so as to form multiple different thin-film magnetic heads when the substrate is divided, as recited in claim 31.

The prior art of Hirooka '442 also teaches the known technique of placing an identification information on a surface of the substrate layer of a slider or multiple sliders during manufacturing (para.0049-0055). Furthermore, Hirooka '442 teaches that the substrate can include an alignment mark (para.0076-0077) on the slider or the identification information is unique to each substrate and that such information can be

placed on multiple slider bodies during manufacturing (Fig.1-5) (see para.0020-0031), as recited in claims 30-31.

Therefore, a person of ordinary skill in the art would have recognized that applying the known technique of using the alignment mark or identification information pattern for slider substrates layers, either on the substrate principal layer or other layers placed on the substrate, for the purpose of aligning the slider and providing identification data for the slider would have yielded predictable results and would have eased the manufacturing process of the slider substrates.

7. Claims 32 and 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gider. The teachings of Gider have been discussed previously.

Re claims 32 and 35: Gider discloses the claimed invention except for wherein the intermediate layer has a thickness of 1 nm to 1 μm , as recited in claim 32 and wherein the undercoat film has a thickness of 10 nm to 1 μm , as recited in claim 35.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the thicknesses of each layer for the purpose of changed the conductive and/or magnetic characteristics of each layer, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233 (CCPA 1955).

Re claim 36: Gider discloses the claimed invention except for wherein the ceramic base is made of an alumina-based ceramic material including 24 mol % to 75 mol % of α - Al_2O_3 and at most 2 mol % of an additive.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the substrate material composition of either intermediate or substrate layers for the purpose of modifying the conductive properties of the thin film substrate, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416 (CCPA 1960).

Re claim 37: Gider further discloses wherein the ceramic base further includes a carbide or nitride carbonate of a metal (Al_2O_3 -TiC; see [0023]).

Response to Arguments

8. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CARLOS E. GARCIA whose telephone number is (571)270-1354. The examiner can normally be reached on M-Th 9am-5pm F 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Thi Nguyen can be reached on 571-272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. E. G./
Examiner, Art Unit 2627
9/10/2010

/Joseph Haley/
Examiner, Art Unit 2627